Chapter 3: Guidelines

The guidelines describe how to treat a parkway in a way that protects and enhances its historic and scenic characteristics while providing safe and comfortable travel and recreational use. The guidelines do not establish new or different geometric design standards or criteria for parkway roadways, nor do they imply that safety and mobility are less important design considerations. Fortunately, there is a considerable degree of flexibility and opportunity for engineer or designer judgment built into established roadway design criteria and current engineering practices, as reflected in the MassHighway Project Development and Design Guide. These guidelines illustrate how to take advantage of this flexibility in order to preserve and enhance historic parkways throughout the Commonwealth. Where these guidelines do not provide specific dimensions, refer to the MassHighway *Project Development and Design Guide* or, in turn, sources listed in the Bibliography.

The guidelines are organized into the following categories and sequence, consistent with the MassHighway *Project Development and Design Guide*:

- Alignment
- Cross Section Elements
- Bridges
- Intersections and Curb Cuts, and
- Drainage.

The guidelines are consistent with *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes.*[1] The two most frequent treatments are *preservation* and *rehabilitation*. A given project may include some elements for which preservation is appropriate and others for which rehabilitation is appropriate instead. For as many elements as possible, these guidelines adhere to the standards for preservation. For those elements where preservation is neither feasible nor appropriate, then at the minimum the guidelines adhere to the standards for rehabilitation.

Preservation treatment is preferred for twelve elements: alignment, vistas, interface of roadway and landscape grading, shoulders, lane number and width, medians, vegetation, curbs, walls, bridges, rotaries, and culverts and swales. Other than for those twelve elements, rehabilitation is the appropriate treatment. The following table summarizes the preferred treatment by element.

Preferred Treatment by Element		
Element (as organized in this chapter)	Preservation	Rehabilitation
Alignment	■■■■■■	
Cross Section Elements		
Vistas from the Roadway	■■■■■■	
Interface of Roadway and Landscape Grading	■■■■■■	
Sidewalks and Pathways		■■■■■■
Shoulders	■■■■■■	
Lane Number and Width	■■■■■■	
Pavement Markings		■■■■■■
Road Surface		■■■■■■
Medians	■■■■■■	
Vegetation	■■■■■■	
Curbs	■■■■■■	
Clear Zone		■■■■■■
Traffic Barriers		■■■■■■
Walls	■■■■■■	
Utilities		■■■■■■
Signage		■■■■■■
Lighting		■■■■■■
Bridges	■■■■■■	
Intersections and Curb Cuts		
Parkway Terminus Points		■■■■■■
Interface with Municipal Roads		■■■■■■
Traffic Signals		■■■■■■
Rotaries	■■■■■■	
Interface with Recreation Facilities		■■■■■■
Curb Cuts		■■■■■■
Drainage		
Roadway Drainage		■■■■■■
Stormwater Best Management Practices		■■■■■■
Culverts and Swales	■■■■■■	

Although preservation is the preferred treatment for the twelve elements listed in the chart, it is important to recognize that there will be situations where straight preservation does not satisfy overall parkway goals. The recently completed Memorial Drive Rehabilitation Project is a good example of this type of situation. Preserving three lanes of eastbound traffic along the Charles River would have retained the existing lane number and width, but would have missed the opportunity to increase parkland along the river and to accommodate the large number of bicyclists and pedestrians in a successful way. The design team met overall parkway preservation goals by rehabilitating lane number and width rather than preserving these elements. The appropriate design solution for a particular parkway project will be based on an analysis of existing conditions and the resulting design controls.

Alignment

Issues


A sinuous vertical and horizontal alignment combined with magnificent tree planting on the Jamaicaway and the VFW Parkway, two Connecting Parkways.

Of all the elements of parkway design, roadway alignment has the greatest impact on the user's experience of the parkway. Alignment consists of a combination of curved and straight segments in the vertical and horizontal dimension. Roads have *horizontal curvature* and *vertical curvature*. Engineers express vertical curvature with *profile drawings*. Consistent with their original design intent, every parkway should convey its traffic enjoyably and comfortably as well as safely, whether the traffic is vehicular, cyclist, pedestrian, or a combination.

Most parkway roadways were designed with curvilinear horizontal and vertical alignments that conform to the landscape. The landscape elements were frequently located in close proximity to the pavement edges and were intended as prominent scenic features. Rises in profile and sweeping curves often provide the traveler with middle and long distant views.

Design speed was typically not a consideration in the construction of many of the original parkways because travel speeds were uniformly slow. Curvilinear alignments satisfied the original design intent of driving for pleasure. With the advent of motorized travel, however, the desire of motorists to attain faster travel speeds began to conflict with the travel speeds implicit in the degree of curvature of the alignments. On parkways that serve as major transportation corridors, the number and higher-than-posted speed of vehicles strain the ability of the roads' curvilinear alignment to support them. Higher travel speeds conflict with the original design intent.

The existing minimum radius along a section of roadway dictates the maximum safe travel speed. It allows sufficient sight lines for adequate stopping distance. The travel speed should also be compatible with the intended mix (pleasure vehicles only versus trucks). An alignment alteration to attain a higher travel speed would significantly impact the historical roadway cross section, its character and original design intent and may also preclude shared use of the roadway with bicycles and pedestrians.

Goal

Preserve original roadway alignment and profile.

Guidelines

- Where safety problems have been documented, evaluate measures to improve safety in a progressive manner starting with the least intrusive approach, for example: better enforce the existing speed limit, evaluate the need for a change in the speed limit, install warning signs on crest curves, install traffic calming measures such as increased curb reveal up to 8 inches, narrower travel lanes and shoulders where safe, elevated intersections or walkways on low-speed roadways, or roundabouts at major intersections if historically appropriate, and implement planning measures to lower the volume of demand by redirecting traffic.

- Where the stopping sight distance (per MassHighway *Project Development and Design Guide*, 3.7) is inadequate for a given speed limit, if above measures do not improve safety sufficiently, remove minor sight obstructions such as specific tree branches that do not substantially alter roadside character.

- Allow minimal alignment changes only where safety data still clearly and overwhelmingly indicate a deficiency directly attributable to the alignment of the roadway.

- Only remove ledge to achieve improved sight lines if based on sound assessment of safety needs and only as a last resort. Keep ledge removal minimal, and match the resulting ledge face to the original slope, texture, and height as much as possible. Preserve or restore native plantings and drainage systems.

Cross-Section Elements

Stone wall in Moore State Park in Paxton dates back to the era of grist and sawmills.

The cross section refers to the roadway and its immediate parkland corridor as illustrated in the sections illustrated in Chapter 1. The Design Control Report will define the particular width applicable to each section of the parkway in the project. This section covers the following elements:

- Vistas from the Roadway
- Interface of Roadway and Landscape Grading
- Sidewalks and Pathways
  - Pedestrians
  - Bicyclists
  - Rollerbladers
- Shoulders
- Lane Number and Width
- Pavement Markings
- Road Surface
- Medians
- Vegetation
- Curbs
- Clear Zone
- Traffic Barriers
  - For Safety
  - For Control of Access
  - Gates
- Walls
- Utilities
- Signage
- Lighting

Vistas from the Roadway

Christopher Clark Road at Mount Tom State Reservation in Easthampton.

Issues

The viewshed, where scenic, is a fundamental character-defining feature. Views are often framed by roadside trees. The roadway experience is often punctuated by special vistas. Over time, once attractive vistas of special features inside the parkway may have declined due to poor maintenance, the introduction of overhead utility lines, or the growth of invasive vegetation. For example, walls and fences may have deteriorated, and vistas of fields and riverbanks and pond edges may have been lost. Likewise, vistas extending outside the parkway to attractive features may have disappeared as vegetation within the parkway has become overgrown. Conversely, once attractive vistas extending outside the parkway may have been lost due to development of abutting property not envisioned when the parkway was designed.

Goal

Preserve positive vistas from the roadway and mitigate negative ones.

Guidelines

- Preserve vistas of natural and historic features such as rivers, ponds, fields, walls, fences and historic buildings. Open and maintain vistas that have become overgrown. Preserve publicly owned historic features within the vistas.

- Screen incompatible views that degrade parkway character by managing vegetation, including allowing plant succession where the landscape is wide enough, and planting buffer screens where the landscape corridor is narrow.

- Remove invasive vegetation.

Interface of Roadway and Landscape Grading

This archive photo of documents context-sensitive grading at the time of the creation of the parkway.

Issues

Grading that integrates the roadway alignment with the terrain is another character-defining feature. Side slopes as gentle as space and underlying geology permit have smooth transitions to existing grades. Where space is constricted, retaining walls were introduced rather than steep slopes that might be unstable or vulnerable to erosion. Riprap for steep slope stabilization was avoided. So, too, were sharp changes in slope between steep fill embankments or cuts and the adjacent undisturbed terrain. Steep cuts were avoided unless there was stable underlying bedrock.

Goal

Preserve and use context-sensitive grading to integrate the roadway into the landscape.

Guidelines

- Manage grading of subsoil and fine grading of loam to smooth transitions between the roadway cross section cut and fill side slopes and the natural topography. Involve the landscape architect in both design and inspection of grading.

- Restore the adjacent pre-construction topography to its prior natural contours and soil profile wherever possible.

Sidewalks and Pathways

A variety of users engaged in active recreation or exercise use parkway sidewalks and pathways. Their needs are an essential concern in parkway management. Bituminous concrete or concrete sidewalks run parallel to the roadway, separated by a grass strip. Less formal pathways, sometimes unpaved, occur further off the roadway. Their alignment may be independent of the roadway alignment. This section examines how to accommode pedestrians, cyclists and rollerbladers. In addition to moving along the length of the parkway, these users need to cross the roadway to other destinations along the parkway. Proper crossing design can reduce user conflicts and increase safety.

- Pedestrians

  Issues

  People out for a walk, a jog, or a run, as well as those pushing strollers or in wheelchairs, all use parkways. Pedestrians have always used parkways. Where pedestrian routes along and across parkways need improvement, the improvement must be based on documented need and should be designed in the context of the setting.

  Designed with limited access roadways, many parkways have pedestrian crossings only at widely spaced intersections. On urban parkways, pedestrian crossings at uncontrolled locations and at rotaries present challenges. In many locations where the historic design does not provide safe accommodation, the Design Control Report may support some alterations. Options to improve pedestrian crossings need to be evaluated in terms of probable effectiveness and impact to the parkway.

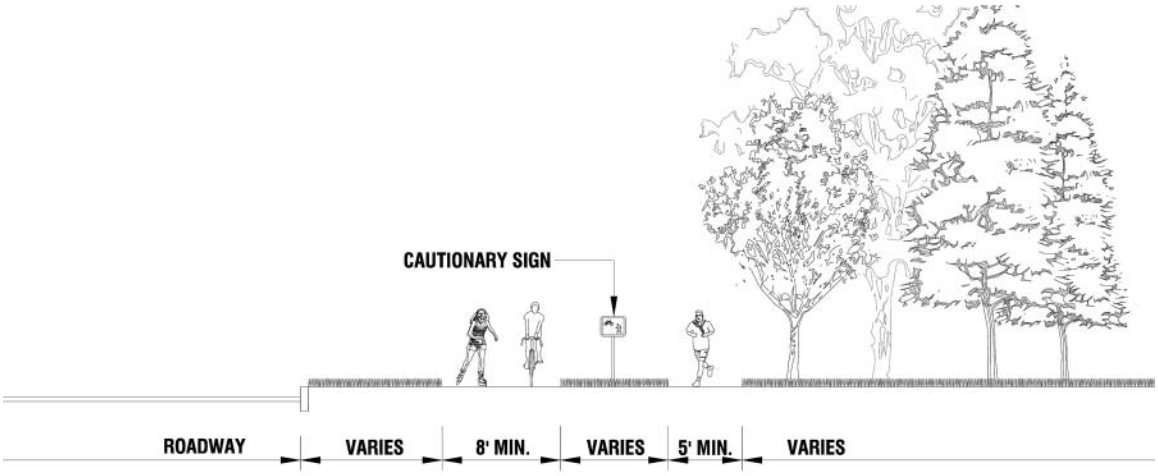
  On the most popular urban parkways, runners and bicyclists have degraded the grass shoulders. Intensive use has compacted and eroded the soil damaged turf and exposed tree roots. Even where there is a paved pathway, runners prefer grass as a running surface. Proximity of some paths to vehicular traffic poses a safety risk.

  Goal

  Accommodate the safety and comfort of pedestrians within the parkway cross section on an equal level with vehicles without sacrificing roadside shade trees and geological features.

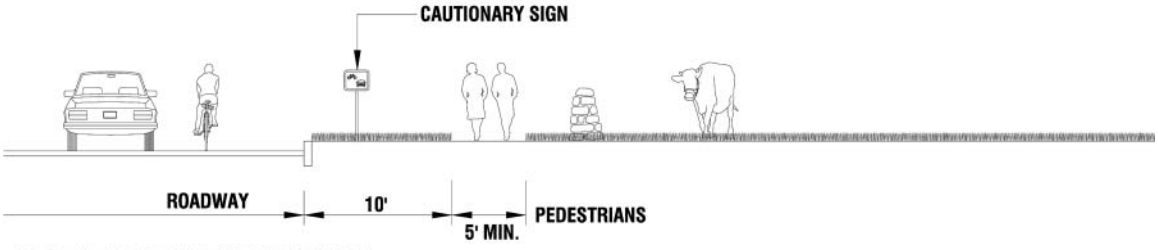
  Guidelines

  - Design all walkways in accordance with the Massachusetts Architectural Access Board (MAAB) and Americans With Disabilities Act (ADA) requirements. Consult MassHighway engineering directives on pedestrian accommodation.



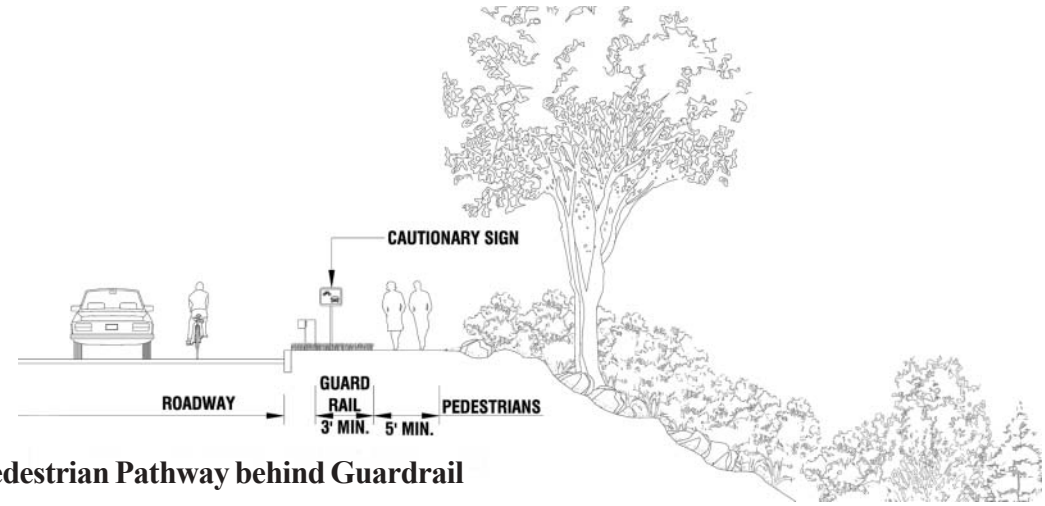
Separate Pathways for Bicyclists and Pedestrians

- In areas of high demand where shared path use is causing unsafe conditions for pedestrians, cyclists and other users, provide, if space allows, a separate pedestrian pathway.



Pedestrian Pathway Only

- Where adjacent space allows, locate pathways that run parallel to the roadway at least ten (10) feet back from the immediate edge of the road.

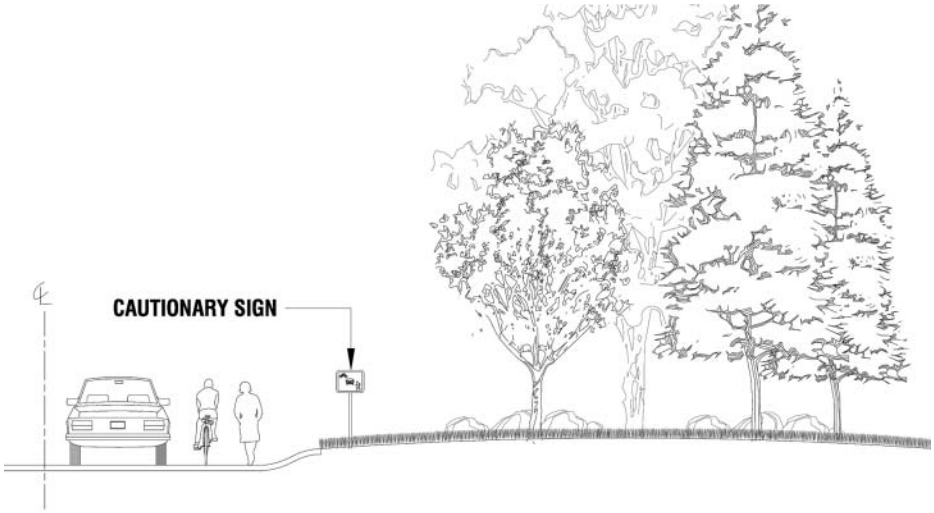


Pedestrian Pathway behind Guardrail

- Where this is not feasible, or where the historic alignment of a significant path takes it close to the road, install low-deflection guardrails to protect pedestrians.

- Where improved pedestrian safety is needed and soil compaction and erosion are significant issues, provide a walking/running surface such as stabilized aggregate to discourage off-path foot traffic.

- On parkways where pedestrians share the roadway pavement with vehicles and bicyclists, install warning signs and pavement markings regarding shared use at regular intervals. If the roadway pavement provides wide travel lanes and shoulders are paved, delineate a separate cyclist/pedestrian lane on the paved shoulder.



Shared Roadway for All Users

- Provide safe pedestrian passage across parkways. Retain historic crossing locations. On heavy-traffic parkways where existing crosswalks are over one half mile apart, add crosswalks. Use a consistent system of white crosswalk markings, supplemented where needed with crosswalk warning signs, warning striping, and such traffic calming measures as speed tables. Avoid speed bumps and rumble strips. Eliminate rumble strips, which are high-maintenance and ineffective and replace with speed tables. Discourage unauthorized crossings at other locations, preferably with vegetation.

- Add pedestrian-actuated crossing signalization if warranted in accordance with the *Manual on Uniform Traffic Control Devices*. Use signal support, housing and ancillary equipment designed to be as unobtrusive as possible. Paint dark green (Standard Federal Color #14062), to match sign posts and, if controlled by DCR, light poles.

- Bicyclists

Issues

Parkways, especially in the urbanized areas of greater Boston, are popular bicycle routes. Although bicycles were a popular form of transportation when parkways were created, there were no dedicated bicycle lanes. Historical documents demonstrate that from the beginning cyclists shared the paved roadway with other users.

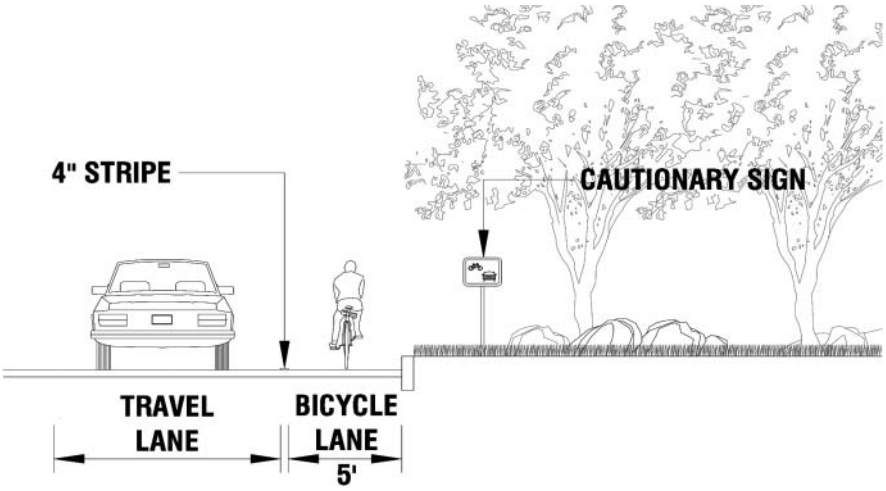
With the advent of heavy traffic, the narrow lanes, curvilinear alignments and rotaries, became increasingly inhospitable to shared use by motor vehicles and bicycles. Shared use of sidewalks and pathways by cyclists and pedestrians raises safety concerns. Consequently, the dual objectives to preserve historic design features and to accommodate bicycle access on parkways can conflict.

Goal

Appropriately accommodate the safety and comfort of cyclists along all parkways, without sacrificing roadside shade trees and geological features.

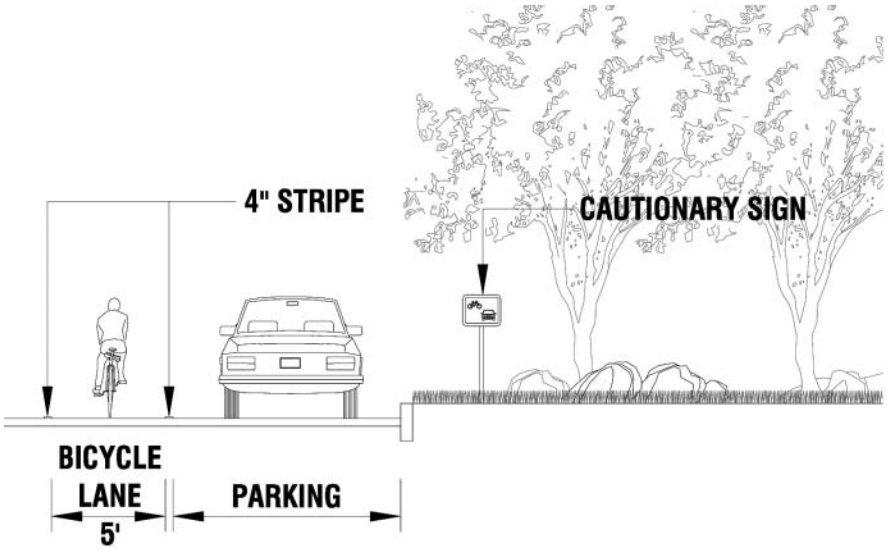
Guidelines

- Design bicycle facilities in accordance with the AASHTO *Guide for the Development of Bicycle Facilities* and the MassHighway *Project Development and Design Guide***.** Consult MassHighway engineering directives on bicycle accommodation.



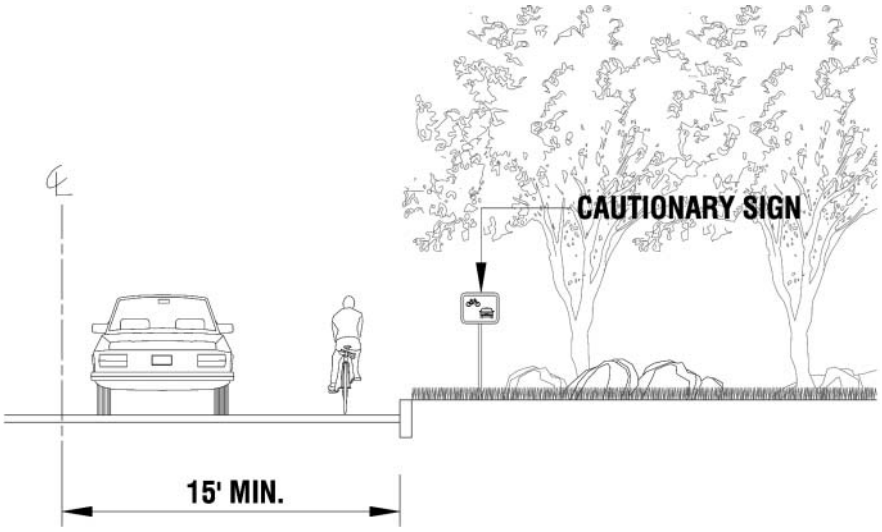
Dedicated Bicycle Lane

- Where dedicated bicycle lanes are desirable, provide a width of five (5) feet, with a solid four (4) inch white line between the travel lane and the bicycle lane.



Bicycle Lane Adjacent to Roadway Parking

- Where a bicycle lane is located adjacent to roadside parking, delineate the right side of the bike lane and the left edge of the parking lane with a solid 4-inch white line**.**



Bicycle Accommodation in the Roadway

- Otherwise, accommodate shared lane use by bicycles and motorists if the lane width from centerline to pavement edge is fifteen (15) feet minimum. Install signs and pavement markings to indicate where motorists and bicycles share the roadway.

- If the lane width from centerline to pavement edge is less than fifteen (15) feet, in determination of Design Controls carefully evaluate travel speeds and traffic volumes to determine if the contemplated narrower pavement width will safely accommodate both users. Where bicycle travel is likely in the roadway, provide the shoulder with a smooth, clean, even, well-drained travel surface (such as bituminous concrete or cement concrete) and bicycle-safe drainage structure grates.

- Where a dedicated off-road bike path is needed and feasible, integrate it with the landscape yet design it to be separate and clearly distinguishable from pedestrian paths, unless specifically designated as a shared path. Adhere to current bikeway design criteria.

- Discourage bicycle use of sidewalks and pedestrian footpaths with signage.

- Rollerbladers

  Issues

  Rollerbladers and skateboarders are relatively new recreational users. Narrow lanes, curvilinear alignments and rotary intersections are unsafe for these users. Demand for their accommodation is much lower than for pedestrian and bicycle accommodation. Rollerbladers are more compatible with bicyclists than with pedestrians, because of their speed and preference for a paved surface. They should not travel in the roadway where traffic is heavy or on a heavily used shared pathway.

  Goal

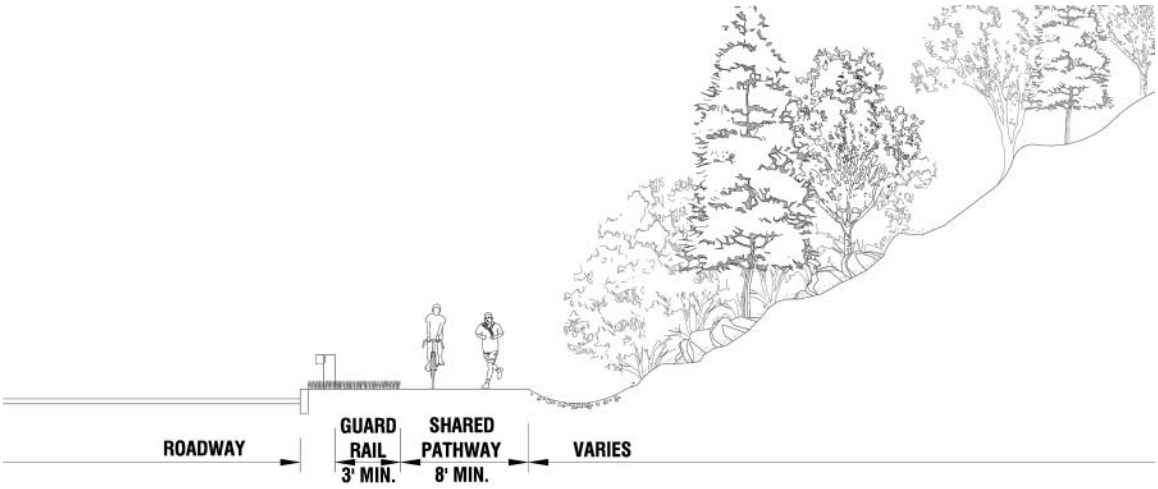
  Appropriately accommodate safe recreational use of rollerbladers on parkways without sacrificing roadside shade trees and geological features.

  Guidelines

  - In the Design Control Report, review the needs of rollerbladers. Determine if a separate or a shared-use pathway is needed.

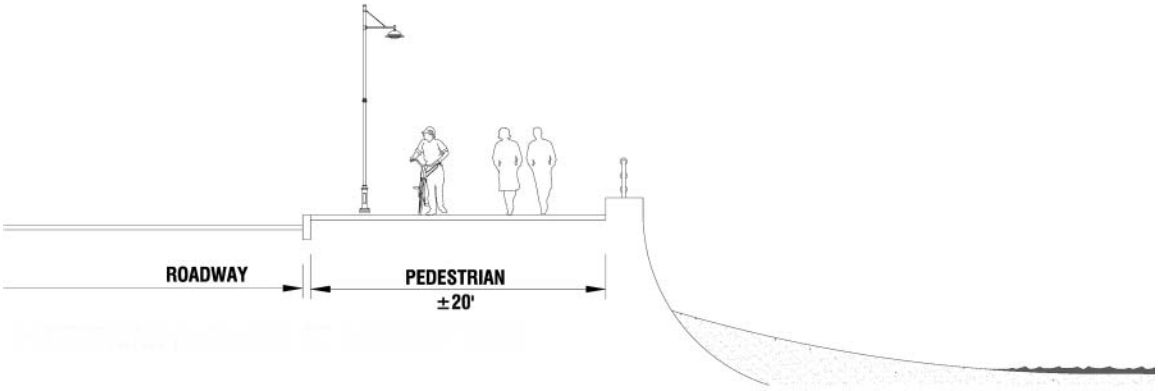
  - If the corridor width permits, provide two separate off-roadway trails: a paved trail at least eight (8) feet wide for two-way traffic, for bicyclists/rollerbladers and an unpaved trail at least five (5) feet wide with specialized soils for pedestrians/runners.

  - If separate off-roadway accommodation is not possible, provide shared paved off-roadway accommodation at least eight (8) feet wide, set a minimum of ten (10) feet back from the curb and outside the clear zone so as not to require a guardrail, for pedestrians, cyclists and rollerbladers.



Shared Pathway Behind Guardrail

- Otherwise, if the historic roadway cross section does not include a curbside sidewalk, provide shared paved off-roadway accommodation, at least eight (8) feet wide, set a minimum of three (3) feet behind a compatibly designed guardrail, for pedestrians, cyclists, and rollerbladers.



Pedestrian Pathway at Roadway Edge

- If the historic roadway cross-section includes a sidewalk, provide cautionary signage indicating shared use of sidewalk.

- Otherwise, provide the following two features: a fifteen (15) feet wide lane within the roadway paving to be shared by motorized vehicles, bicycles, and rollerbladers, and an off-roadway unpaved trail at least five (5) feet wide with specialized soils for pedestrians and joggers, set a minimum of ten (10) feet back from the curb if no guardrail, or a minimum of three (3) feet behind a compatibly designed guardrail.

- In all cases provide appropriate cautionary signage indicating proper use of the roadway and pathway or pathways.